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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,088	12/12/2001	Henry Esmond Butterworth	GB919990144	9477

7590 06/03/2005  
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EXAMINER

WALTER, CRAIG E

ART UNIT PAPER NUMBER

2188

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/015,088

Applicant(s)

BUTTERWORTH ET AL.

Examiner

Craig E. Walter

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/12/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-9 and 11-36 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/12/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/24/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. This application is in condition for allowance except for the following formal matters:

Claim 10 objected to under CFR 1.71 because of the following informalities:

It is of the examiner's opinion that applicant intended claim 10 to further limit claim 4, rather than claim 9 for the following reasons:

The phrase "the point in time virtual copy operation" would lack antecedent basis absent the aforementioned corrected dependency.

The dependency of claim 20 on claim 15 is similar in structure to the dependency of claim 10 on claim 4.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

***Allowable Subject Matter***

2. Claims 1-9 and 11-36 are allowed.
3. The following is a statement of reasons for the indication of allowable subject matter:

As for claims 1 and 12, though Jouppi (US Patent 5,689,679) teaches of a data storage system including a cache (consisting of high speed memory such as an SRAM) comprising a variable number of levels (column 5, lines 60-64), each level having a cache controller (column 6: lines 2-5, Figure 4, element 320; line 14, Figure 5, element 370; and line 19, Figure 5, element 420) and a cache memory (column 6: lines 25-6, Figure 4, element 350; line 16, Figure 5, element 400; and line 21, Figure 5, element 450), his memory system fails to teach address mapping to be both recorded and applied between each level of the cache.

As for claims 22 and 36, Jouppi discloses a method of data storage comprising reading and writing data to a cache having a variable number of levels (column 2, lines 36-44), however his invention fails to teach recording and applying address mapping between each level of the cache. Likewise Jouppi fails to disclose a computer program product stored on a computer readable storage medium comprising computer readable program code means for said recording and applying address mapping. No reasonable combination of Jouppi's invention with the prior art of record could be produced to meet the limitations of these four claims.

Claims 2-9 and 11, 13-21, 23-35 further limit claims 1, 12, and 22 respectively therefore they too are deemed allowable.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Howard et al. (US Patent 6,629,198 B2) discloses a write-ahead hash log containing an updated hash value and an address corresponding to a modified cache block.

Sicola et al. (US Patent 6,618,794 B1) discloses a system for generating a virtual point-in-time copy (snap-shot) of a logical unit of a storage system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig E. Walter whose telephone number is (571) 272-8154. The examiner can normally be reached on 8:30a - 5:00p M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Craig E Walter  
Examiner  
Art Unit 2188

CEW

*Mano Padmanabhan*  
*5/20/05*

**MANO PADMANABHAN**  
**SUPERVISORY PATENT EXAMINER**